a1 cont

completed its lifetime when the pressure drop across the filter increases to about 3 inches of water or more at a test condition of 10 ft/min of flowing medium.--

Paragraph beginning on page 6, line 12 should read as follows.

a2

-- The conventional filter construction involves the application of fine fiber to the substrate in a single layer in a substantially complete coverage of the media. Sufficient fine fiber is typically used in the fine fiber layer such that the resulting media construction has an initial efficiency of greater than 50%, preferably greater than 80% (on an average basis) with no individual construction having an efficiency less than 30% (the efficiency test is ASTM 1215 89 using monodisperse 0.78 micron polystyrene latex particulate at 20 ft-min^{-1}). This efficiency test generally measures the effectiveness of the test substrate to remove from a moving air stream the recited particulate that is moving at the recited rate. The efficiency is expressed as a percent relating to the percent of the total particles tested that is removed by the filter. This test method measures the initial efficiency of a flatsheet filter medium by sampling representative volumes of the upstream and downstream latex aerosol concentrations in a controlled airflow chamber. Filtered and dried air is passed through an atomizer to produce an aerosol containing suspended latex spheres. This aerosol is then passed through a charge neutralizer. The aerosol is then mixed and diluted with additional preconditioned air to produce a stable, neutralized, and dried aerosol of latex spheres to be used in the efficiency test. These test techniques can be used in filter medium testing for aerosol efficiency performance at discrete aerosol particle sizes for both manufacturers and users. It establishes a basis of efficiency comparison of one filter medium to another. For conventional filters, efficiencies less than about 30% on the average or for any particular filter is typically considered unacceptable since such a filter would pass a substantial proportion of the impinging particulate in the mobile fluid phase. Such an amount of particulate, in an engine application, in a gas turbine application or other such applications would pass substantially more particulate to the working parts of the mechanism such that substantial wear or failure of the mechanical device could result.--

Paragraph beginning on page 13, line 28 should read as follows.

A3

--An important aspect of the invention is the utility of such microfiber or nanofiber materials formed into a filter structure. In such a structure, the fine fiber materials of the invention are formed on and adhered to a filter substrate. Natural fiber and synthetic fiber substrates, like spun bonded fabrics, non-woven fabrics of synthetic fiber and non-wovens made from the blends of cellulosics, synthetic and glass fibers, non-woven and woven glass fabrics, plastic screen like materials both extruded and hole punched, UF and MF membranes of organic polymers can be used. Sheet-like substrate or cellulosic non-woven web can then be formed into a filter structure that is placed in a fluid stream including an air stream or liquid stream for the purpose of removing suspended or entrained particulate from that stream. The shape and structure of the filter material is up to the design engineer. One important parameter of the filter elements after formation is its resistance to the effects of heat, humidity or both. An important aspect of the filter media of the invention is the ability of the filter media to survive contact with warm humid air. In contact with such hot humid air streams, the fine fiber should retain greater than 50% of the fiber unchanged for filtration purposes after being exposed to air having a temperature of 140°F and 100% relative humidity for 16 hours. One aspect of the filter media of the invention is a test of the ability of the filter media to survive immersion in warm water for a significant period of time. The immersion test can provide valuable information regarding the ability of the fine fiber to survive hot humid conditions and to survive the cleaning of the filter element in aqueous solutions that can contain substantial proportions of strong cleaning surfactants and strong alkalinity materials. Preferably, the fine fiber materials of the invention can survive immersion in hot water while retaining at least 50% of the fine fiber formed on the surface of the substrate as an active filter component. Retention of at least 50% of the fine fiber can maintain substantial fiber efficiency without loss of filtration capacity or increased back pressure. Most preferably retaining at least 75%. The thickness of the typical fine fiber filtration layer ranges from about 0.001 to 5 microns, preferably 0.01 to 3 microns with a fine fiber basis weight ranging from about 0.01 to 240 micrograms-cm^{-2}. The fine fiber layers formed on the substrate in the filters of the invention should be substantially uniform in both filtering performance and fiber location. By substantial uniformity, we mean that the fiber has sufficient coverage of the substrate to have at least some measurable filtration efficiency throughout the covered substrate. Adequate filtration can occur with wide variation in fiber add-on.

a3 cont.

Accordingly, the fine fiber layers can vary in fiber coverage, basis weight, layer thickness or other measurement of fiber add-on and still remain well within the bounds of the invention. Even a relatively small add-on of fine fiber can add efficiency to the overall filter structure.--

Paragraph beginning on page 23, line 18 should read as follows.

a4

--In preferred arrangements, the first layer of permeable coarse fibrous material comprises a material which, if evaluated separately from a remainder of the construction by the Frazier permeability test, would exhibit a permeability of at least 1 meter(s)/min, and typically and preferably about 2-900 meters/min (about 0.03-15 m-sec^{-1}). Herein when reference is made to efficiency, unless otherwise specified, reference is meant to efficiency when measured according to ASTM-1215-89, with 0.78μ monodisperse polystyrene spherical particles, at 20 fpm (6.1 meters/min) as described herein.--

Paragraph beginning on page 26, line 10 should read as follows.

a5

--Example of usable filter constructions are described in U.S. Pat. No. 5,820,646, which patent is incorporated by reference herein. In another example embodiment the fluted construction (not shown) includes tapered flutes. By "tapered," it is meant that the flutes enlarge along their length such that the downstream opening of the flutes is larger than the upstream opening. Such filter constructions are described in U.S. Patent Application Serial No. 08/639,220, herein incorporated by reference in its entirety. Details about fine fiber and its materials and manufacture is disclosed in U.S. Patent Application Serial No. 09/871,583, herein incorporated by reference.--

In the Claims

Please amend the claims to read as follows:

a6

1. (AMENDED) A fine fiber filter media comprising a single layer of filter substrate, the substrate having a first surface and a second surface, the substrate having a permeability of about 0.03 to 15 m-sec^{-1} and an efficiency greater than 5%, the first surface and the second surface each comprising a layer of fine fiber having a diameter of about 0.001 to 0.5